

CLAIMS

We claim:

- 1 1. A package for a die comprising:
 2 a leadframe, having a cavity, being operative to provide structural integrity;
 3 a slug of thermally conductive material, positioned at the base of the cavity; and
 4 a lens, positioned within the leadframe and opposing the cavity, being operative
 5 to provide optical functionality.
- 1 2. A package, as defined in claim 1, further including a submount of thermally
 2 conductive material, connected to the slug.
- 1 3. A package, as defined in claim 2, wherein the thermally conductive material is
 2 selected from a group that includes pure materials, compounds, and composites of
 3 silver, copper, diamond, silicon, aluminum, tungsten, molybdenum, and beryllia.
- 1 4. A package, as defined in claim 1, wherein the thermally conductive material is
 2 selected from a group that includes pure materials, compounds, and composites of
 3 silver, copper, diamond, silicon, aluminum, tungsten, molybdenum, and beryllia.
- 1 5. A package, as defined in claim 1, further comprising:
 2 a die that is thermally connected to the slug; and
 3 an optically transparent material, encapsulating the die, having a hardness less
 4 than Shore 10A.
- 1 6. A package, as defined in claim 1, further comprising:
 2 a die that is thermally connected to the slug; and
 3 an optically transparent encapsulant that has a hardness of at least Shore 50D.
- 1 7. A die assembly, as defined in claim 5, further comprising a submount of
 2 thermally conductive material connected between the die and the slug.

1 8. A die assembly, as defined in claim 7, wherein the thermally conductive
2 material of the slug and the submount are selected from a group that includes pure
3 materials, compounds, and composites of silver, copper, diamond, silicon, aluminum,
4 tungsten, molybdenum, and beryllia.

1 9. A die assembly, as defined in claim 5, wherein the thermally conductive
2 material of the slug and the submount are selected from a group that includes pure
3 materials, compounds, and composites of silver, copper, diamond, silicon, aluminum,
4 tungsten, molybdenum, and beryllia.

1 10. A die assembly, as defined in claim 5, further comprising a reflector cup,
2 positioned near the slug, having a reflective surface.

1 11. A die assembly, as defined in claim 10, wherein the reflector cup is integrated
2 into the leadframe.

1 12. A die assembly, as defined in claim 11, wherein the reflector cup is selected
2 from a group that includes silver, aluminum, gold, silver with a dielectric coating, gold
3 with a dielectric coating, and aluminum with a dielectric coating.

1 13. A die assembly, as defined in claim 12, wherein the reflective surface is
2 selected from a group that includes silver, aluminum, gold, silver with a dielectric
3 coating, gold with a dielectric coating, and aluminum with a dielectric coating.

1 14. A die assembly, as defined in claim 12, wherein the reflective surface includes
2 at least one totally internal reflective surface formed by refractive index step changes $>$
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1 15. A package, as defined in claim 1, further comprising a reflector cup,
2 positioned near the slug, having a reflective surface.

1 16. A package, as defined in claim 15, wherein the reflector cup is integrated into
2 the leadframe.

1 17. A package, as defined in claim 16, wherein the reflector cup is selected from a
2 group that includes silver, aluminum, gold, silver with a dielectric coating, gold with a
3 dielectric coating, and aluminum with a dielectric coating.

1 18. A package, as defined in claim 17, wherein the reflective surface is selected
2 from a group that includes silver, aluminum, gold, silver with a dielectric coating, gold
3 with a dielectric coating, and aluminum with a dielectric coating.

1 19. A package, as defined in claim 17, wherein the reflective surface includes at
2 least one totally internal reflective surface formed by refractive index step changes $>$
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